Employment
Respiratory therapists held about 86,000 jobs in 1998. About 9 out of 10 jobs were in hospital departments of respiratory care, anesthesiology, or pulmonary medicine. Home health agencies, respiratory therapy clinics, and nursing homes accounted for most of the remaining jobs.

Training, Other Qualifications, and Advancement
Formal training is necessary for entry to this field. Training is offered at the postsecondary level by hospitals, medical schools, colleges and universities, trade schools, vocational-technical institutes, and the Armed Forces. Some programs prepare graduates for jobs as registered respiratory therapists (RRT); other, shorter programs lead to jobs as certified respiratory therapists (CRT). According to the Committee on Accreditation for Respiratory Care (CoARC), there were 327 registered respiratory therapist programs and 134 certified respiratory therapist programs in the United States in 1999.

Formal training programs vary in length and in the credential or degree awarded. Most of the CoARC-accredited registered respiratory therapist programs last 2 years and lead to an associate degree. Some, however, are 4-year bachelor's degree programs. Areas of study for respiratory therapy programs include human anatomy and physiology, chemistry, physics, microbiology, and mathematics. Technical courses deal with procedures, equipment, and clinical tests.

More and more therapists receive on-the-job training, allowing them to administer electrocardiograms and stress tests, as well as draw blood samples from patients.

Therapists should be sensitive to patients' physical and psychological needs. Respiratory care workers must pay attention to detail, follow instructions, and work as part of a team. In addition, operating complicated respiratory therapy equipment requires mechanical ability and manual dexterity.

High school students interested in a career in respiratory care should take courses in health, biology, mathematics, chemistry, and physics. Respiratory care involves basic mathematical problem solving and an understanding of chemical and physical principles. For example, respiratory care workers must be able to compute medication dosages and calculate gas concentrations.

Over 40 States license respiratory care personnel. The National Board for Respiratory Care offers voluntary certification and registration to graduates of CoARC-accredited programs. Two credentials are awarded to respiratory therapists who satisfy the requirements: Registered Respiratory Therapist (RRT) and Certified Respiratory Therapist (CRT). All graduates—those from 2- and 4-year programs in respiratory therapy, as well as those from 1-year CRT programs—may take the CRT examination. CRTs who meet education and experience requirements can take a separate examination, leading to the award of the RRT.

Individuals who have completed a 4-year program in a nonrespiratory field but have college level courses in anatomy, physiology, chemistry, biology, microbiology, physics, and mathematics can become a CRT, after graduating from an accredited 1- or 2-year program. After they receive 2 years of clinical experience, they are eligible to take the registry exam to become an RRT.

Most employers require applicants for entry-level or generalist positions to hold the CRT or be eligible to take the certification examination. Supervisory positions and those in intensive care specialties usually require the RRT (or RRT eligibility).

Respiratory therapists advance in clinical practice by moving from care of general to critical patients who have significant problems in other organ systems, such as the heart or kidneys. Respiratory therapists, especially those with 4-year degrees, may also advance to supervisory or managerial positions in a respiratory therapy department. Respiratory therapists in home care and equipment rental firms may become branch managers.

Job Outlook
Job opportunities are expected to remain good. Employment of respiratory therapists is expected to increase much faster than the average for all occupations through the year 2008, because of substantial growth of the middle-aged and elderly population—a development that will heighten the incidence of cardiopulmonary disease.

Older Americans suffer most from respiratory ailments and cardiopulmonary diseases such as pneumonia, chronic bronchitis, emphysema, and heart disease. As their numbers increase, the need for respiratory therapists will increase, as well. In addition, advances in treating victims of heart attacks, accident victims, and premature infants (many of whom are dependent on a ventilator during part of their treatment) will increase the demand for the services of respiratory care practitioners.

Opportunities are expected to be highly favorable for respiratory therapists with cardiopulmonary care skills and experience working with infants.

Although hospitals will continue to employ the vast majority of therapists, a growing number of therapists can expect to work outside of hospitals in home health agencies, respiratory therapy clinics, or nursing homes.

Earnings
Median annual earnings for respiratory therapists were $34,830 in 1998. The middle 50 percent earned between $30,040 and $39,830 a year. The lowest 10 percent earned less than $25,910 and the highest 10 percent earned more than $46,760 a year.

Related Occupations
Respiratory therapists, under the supervision of a physician, administer respiratory care and life support to patients with heart and lung difficulties. Other workers who care for, treat, or train people to improve their physical condition include dialysis technicians, registered nurses, occupational therapists, physical therapists, and radiation therapists.

Sources of Additional Information
Information concerning a career in respiratory care is available from:
☛ American Association for Respiratory Care, 11030 Ables Ln., Dallas, TX 75229-4593. Internet: **http://www.aarc.org**

Information on gaining credentials as a respiratory therapy practitioner can be obtained from:
☛ The National Board for Respiratory Care, Inc., 8310 Nieman Rd., Lenexa, KS 66214-1579. Internet: **http://www.nbrc.org**

For the current list of CoARC-accredited educational programs for respiratory therapy occupations, write to:
☛ Committee on Accreditation for Respiratory Care, 1248 Harwood Rd., Bedford, TX 76021-4244. Internet: **http://www.coarc.com**

Speech-Language Pathologists and Audiologists

(O*NET 32314)

Significant Points

- About half work in schools, and most others are employed by healthcare facilities.
- A master's degree in speech-language pathology or audiology is the standard credential.

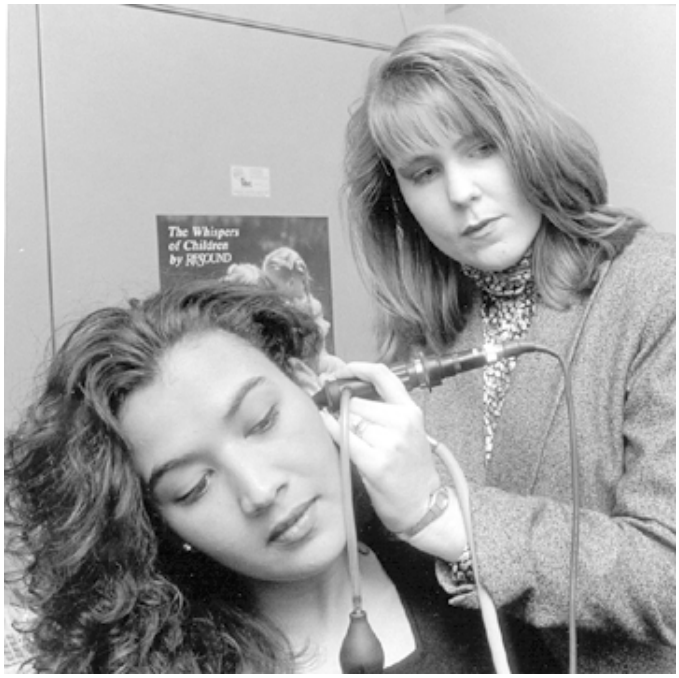
Nature of the Work

Speech-language pathologists assess, treat, and help to prevent speech, language, cognitive, communication, voice, swallowing, fluency, and other related disorders; audiologists identify, assess, and manage auditory, balance, and other neural systems.

Speech-language pathologists work with people who cannot make speech sounds, or cannot make them clearly; those with speech rhythm and fluency problems, such as stuttering; people with voice quality problems, such as inappropriate pitch or harsh voice; those with problems understanding and producing language; and those with cognitive communication impairments, such as attention, memory, and problem solving disorders. They may also work with people who have oral motor problems causing eating and swallowing difficulties.

Speech and language problems can result from hearing loss, brain injury or deterioration, cerebral palsy, stroke, cleft palate, voice pathology, mental retardation, or emotional problems. Problems can be congenital, developmental, or acquired. Speech-language pathologists use written and oral tests, as well as special instruments, to diagnose the nature and extent of impairment and to record and analyze speech, language, and swallowing irregularities. Speech-language pathologists develop an individualized plan of care, tailored to each patient's needs. For individuals with little or no speech capability, speech-language pathologists select augmentative alternative communication methods, including automated devices and sign language, and teach their use. They teach these individuals how to make sounds, improve their voices, or increase their language skills to communicate more effectively. Speech-language pathologists help patients develop, or recover, reliable communication skills so patients can fulfill their educational, vocational, and social roles.

Most speech-language pathologists provide direct clinical services to individuals with communication disorders. In speech and language clinics, they may independently develop and carry out treatment programs. In medical facilities, they may work with physicians, social workers, psychologists, and other therapists to develop and execute treatment plans. Speech-language pathologists in schools develop individual or group programs, counsel parents, and may assist teachers with classroom activities.



Using specialized video equipment, an audiologist examines a patient's ear canal.

Speech-language pathologists keep records on the initial evaluation, progress, and discharge of clients. This helps pinpoint problems, tracks client progress, and justifies the cost of treatment when applying for reimbursement. They counsel individuals and their families concerning communication disorders and how to cope with the stress and misunderstanding that often accompany them. They also work with family members to recognize and change behavior patterns that impede communication and treatment and show them communication-enhancing techniques to use at home.

Some speech-language pathologists conduct research on how people communicate. Others design and develop equipment or techniques for diagnosing and treating speech problems.

Audiologists work with people who have hearing, balance, and related problems. They use audiometers, computers, and other testing devices to measure the loudness at which a person begins to hear sounds, the ability to distinguish between sounds, and the nature and extent of hearing loss. Audiologists interpret these results and may coordinate them with medical, educational, and psychological information to make a diagnosis and determine a course of treatment.

Hearing disorders can result from a variety of causes including trauma at birth, viral infections, genetic disorders, exposure to loud noise, or aging. Treatment may include examining and cleaning the ear canal, fitting and dispensing hearing aids or other assistive devices, and audiologic rehabilitation (including auditory training or instruction in speech or lip reading). Audiologists may recommend, fit, and dispense personal or large area amplification systems, such as hearing aids and alerting devices. Audiologists provide fitting and tuning of cochlear implants and provide the necessary rehabilitation for adjustment to listening with implant amplification systems. They also measure noise levels in workplaces and conduct hearing protection programs in industry, as well as in schools and communities.

Audiologists provide direct clinical services to individuals with hearing or balance disorders. In audiology (hearing) clinics, they may independently develop and carry out treatment programs. Audiologists, in a variety of settings, work as members of interdisciplinary professional teams in planning and implementing service delivery for children and adults, from birth to old age. Similar to speech-language pathologists, audiologists keep records on the initial evaluation, progress, and discharge of clients. These records help pinpoint problems, track client progress, and justify the cost of treatment, when applying for reimbursement.

Audiologists may conduct research on types of, and treatment for, hearing, balance, and related disorders. Others design and develop equipment or techniques for diagnosing and treating these disorders.

Working Conditions

Speech-language pathologists and audiologists usually work at a desk or table in clean comfortable surroundings. The job is not physically demanding but does require attention to detail and intense concentration. The emotional needs of clients and their families may be demanding. Most full-time speech-language pathologists and audiologists work about 40 hours per week; some work part-time. Those who work on a contract basis may spend a substantial amount of time traveling between facilities.

Employment

Speech-language pathologists and audiologists held about 105,000 jobs in 1998. About one-half provided services in preschools, elementary and secondary schools, or colleges and universities. Others were in offices of speech-language pathologists and audiologists; hospitals; offices of physicians; speech, language, and hearing centers; home health agencies; or other facilities.

Some speech-language pathologists and audiologists are self-employed in private practice. They contract to provide services in

schools, physician's offices, hospitals, or nursing homes, or work as consultants to industry. Audiologists are more likely to be employed in independent healthcare offices, while speech-language pathologists are more likely to work in school settings.

Training, Other Qualifications, and Advancement

Of the States that regulate licensing (44 for speech-language pathologists and 49 for audiologists), almost all require a master's degree or equivalent. Other requirements are 300 to 375 hours of supervised clinical experience, a passing score on a national examination, and 9 months of postgraduate professional clinical experience. Thirty-six States have continuing education requirements for licensure renewal. Medicaid, medicare, and private health insurers generally require a practitioner to be licensed to qualify for reimbursement.

About 235 colleges and universities offer graduate programs in speech-language pathology. Courses cover anatomy and physiology of the areas of the body involved in speech, language, and hearing; the development of normal speech, language, and hearing; the nature of disorders; acoustics; and psychological aspects of communication. Graduate students also learn to evaluate and treat speech, language, and hearing disorders and receive supervised clinical training in communication disorders.

About 115 colleges and universities offer graduate programs in audiology in the United States. Course work includes anatomy; physiology; basic science; math; physics; genetics; normal and abnormal communication development; auditory, balance and neural systems assessment and treatment; audiologic rehabilitation; and ethics.

Speech-language pathologists can acquire the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) offered by the American Speech-Language-Hearing Association, and audiologists can earn the Certificate of Clinical Competence in Audiology (CCC-A). To earn a CCC, a person must have a graduate degree and 375 hours of supervised clinical experience, complete a 36-week postgraduate clinical fellowship, and pass a written examination. According to the American Speech-Language Hearing Association, as of 2007, audiologists will need to have a bachelor's degree and complete 75 hours of credit toward a doctoral degree in order to seek certification. As of 2012, audiologists will have to earn a doctoral degree in order to be certified.

Speech-language pathologists and audiologists should be able to effectively communicate diagnostic test results, diagnoses, and proposed treatment in a manner easily understood by their clients. They must be able to approach problems objectively and provide support to clients and their families. Because a client's progress may be slow, patience, compassion, and good listening skills are necessary.

Job Outlook

Employment of speech-language pathologists and audiologists is expected to grow much faster than the average for all occupations through the year 2008. Because hearing loss is strongly associated with aging, rapid growth in the population age 55 and over will cause the number of persons with hearing impairment to increase markedly. In addition, baby boomers are now entering middle age, when the possibility of neurological disorders and associated speech, language, and hearing impairments increases. Medical advances are also improving the survival rate of premature infants and trauma and stroke victims, who then need assessment and possible treatment.

Employment growth in health services would be even faster except for Federal legislation imposing limits on reimbursement for therapy services that may continue to adversely affect the job market for therapy providers over the near term. Because of the effects of these provisions, the majority of expected employment growth in health services will occur in the second half of the projection period.

Employment in schools will increase along with growth in elementary and secondary school enrollments, including enrollment of special education students. Federal law guarantees special education and related services to all eligible children with disabilities. Greater awareness of the importance of early identification and diagnosis of speech, language, and hearing disorders will also increase employment.

The number of speech-language pathologists and audiologists in private practice will rise due to the increasing use of contract services by hospitals, schools, and nursing homes. In addition to job openings stemming from employment growth, some openings for speech-language pathologists and audiologists will arise from the need to replace those who leave the occupation.

Earnings

Median annual earnings of speech-language pathologists and audiologists were $43,080 in 1998. The middle 50 percent earned between $34,580 and $55,260 a year. The lowest 10 percent earned less than $27,460 and the highest 10 percent earned more than $80,720 a year. Median annual earnings in the industries employing the largest number of speech-language pathologists and audiologists in 1997 were as follows:

Hospitals	$44,800
Offices of other health care practitioners	44,500
Elementary and secondary schools	38,400

According to a 1999 survey by the American Speech-Language-Hearing Association, the median annual salary for full-time certified speech-language pathologists or audiologists who worked 11 or 12 months annually was $44,000. For those who worked 9 or 10 months annually, median annual salaries for speech-language pathologists were $40,000; for audiologists, $42,000.

Related Occupations

Speech-language pathologists specialize in the prevention, diagnosis, and treatment of speech and language problems. Workers in related occupations include occupational therapists, optometrists, physical therapists, psychologists, recreational therapists, and rehabilitation counselors.

Audiologists specialize in the prevention, diagnosis, and treatment of hearing problems. Workers in related occupations include neurologists, neonatologists, acoustical engineers, industrial hygienists, and other rehabilitation professionals.

Sources of Additional Information

State licensing boards can provide information on licensure requirements. State departments of education can supply information on certification requirements for those who wish to work in public schools.

General information on careers in speech-language pathology and audiology is available from:

☛ American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852. Internet: **http://www.asha.org**

Information on a career in audiology is also available from:

☛ American Academy of Audiology, 8201 Greensboro Dr., Suite 300, McLean, VA 22102.